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CLASS II. EQUISETINAE Prantl.
ORDER IV. EQUISETACEAE Rich.
Family 1. *Equsietaceae* Rich.

CLASS III. LYCOPODINAE Prantl.

Sub-Class I. Isosporeae Prantl.
ORDER V. LYCOPODIACEAE Rich.
Family 1. *Lycopodiaceae.*

Sub-Class II. Heterosporeae Prantl.
ORDER VI. ISOÖTACEAS Bartl.
Family 1. *Isoötaceae* Bartl.
ORDER VII. SELAGINELLACEAE Meth.
Family 1. *Selaginellaceae* Meth.

Our familiar *Pteris aquilina* L. becomes under Luerssen's treatment, *Pteridium äquilinum* Kuhn. So too *Aspidium filix-femina* Sw., the *Asplenium filix formina* Beruh., of the ordinary manuals, becomes *Athyrium filix formina* Roth.—*Charles E. Bessey.*

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

PHILADELPHIA ACADEMY OF NATURAL SCIENCES.—April 24, 1888. Professor Ryder spoke of the displacement of the nucleus of tissue cells and in ova by a large amount of yolk matter.

May 1, 1888. Professor Leidy called attention to some *Menopon perale*, and also spoke of the parasites of the rock-fish.—Mr. Meehan exhibited specimens of the so-called navel orange.—Professor Wilson described some ærial roots in corn caused by abnormal watering of the plant. May 9, 1888. Professor Leidy spoke of the parasites of the pike and the pickerel.—Dr. Meyer described a tertiary barnacle, *Balanus concavus*, occurring in the neighborhood of Norfolk, Va. May 15, 1888. Dr. McCook read a description of four new species of orb-weaving spiders. He also made a communication on the color of spiders. May 29, 1888. Mr. Wilcox called attention to a number of shells beveled and perforated to permit a stick being thrust through for a handle.

June 5, 1888. Professor Heilprin called attention to a collection of specimens obtained from a deep boring at St. Augustine, Fla.—Dr. Chapman described the generative organs of a female spotted hyena from South Africa.—Mr. Meehan spoke of the importance of studying the companionship of plants, and announced the discovery of *Trientalis americana* in the vicinity of Philadelphia. June 12, 1888. Dr. McCook read a description of *Evatypus woodwardii*, a fossil spider. June 19, 1888. Professor Heilprin discussed the age of Laramie. June 26, 1888. Dr. McCook gave a résumé of a paper on the purse weed spiders.—Professor Ryder described the eggs of the sturgeon.

July 3, 1888. Dr. Koenig described some crystals of magapilite.—Mr. Meehan spoke of the so-called flowers of Hydrangea. July 10, 1888. A communication from Dr. Leidy on the fauna of Beach Haven, and on the embryology of *Lepas fascicularis*, was read.—The chairman exhibited a fine specimen of the snow plant.

August 7, 1888. Mr. Meehan spoke on the sexes of flowers.

September 4, 1888. Mr. Meehan and others discussed the polarity of the compass plant.

October 2, 1888. Professor Leidy called attention to the claw of a giant sloth found in the drift in Mills County, Ind., and exhibited a portion of a human skull having four true molars. October 9, 1888. Professor Heilprin made some remarks on the classification of the tertiary deposits. October 16, 1888. Mr. Redfield called attention to a probable hybrid Solanum.—Dr. Morris alluded to the effects of insect bites.—Dr. McCook read a paper on *Lycosa arenicola*. October 23, 1888. Professor Heilprin spoke of the physiography of the Bermuda Islands. October 30, 1888. Professor Heilprin discussed the Bermuda coral reefs.

November 6, 1888. Professor Heilprin described the fauna of Bermuda Islands. November 13, 1888. Professor Heilprin continued his remarks on the zoology of Bermudas. November 20, 1888. Professor Ryder presented the results of his study of the skeleton of living forms.—Dr. McCook described a case of double cocoonizing in *Argiope riparia*.—Dr. Rushenberger read a biographical notice of the late George W. Tryon.—Dr. Leidy read a communication on the zoology of Beach Haven.

December 4, 1888. Dr. Morris and others discussed the color of glass due to exposure to heat and air.—Mr. Ives described two new forms of star-fish.—Mr. Morris read a paper on subsidence. December 11, 1888. Dr. McCook read a paper on nomenclatures of spiders.—Professor Ryder gave the results of his study of *Mya arenaria.* He also exhibited and described a section of the skin of an elephant. Professor Leidy spoke of the embryology of Lepas. December 18, 1888. Mr. Pilsbry called attention to anomalies in *Helix bermudensis.*—Dr. Foote spoke of Threnardite.—Mr. Morris read a communication on colored glass.—Professor Heilprin summarized the observations made by the recent Greenland expedition.

January 1, 1889. Dr. Koenig exhibited and described a specimen of Anhydrite.—Dr. Leidy discussed the Gregarines. January 8, 1889. Professor Ryder made a communication on the axial skeleton.

February 12, 1889. Professor Ryder read a paper on the development of the calcified skeleton of Chelonians. February 19, 1889. Dr. Leidy described some teeth of a fossil horse from a limestone quarry in Florida.—Mr. Ives reported finding on the omentum of a monkey a number of Pentastomum.

March 5, 1889. Dr. Horn referred to the incrustation of fragments of wood by the mineral constituents of water or soil. —Dr. Leidy exhibited two spiders from Peru, and stated that the tooth of a fossil Llama, from Florida, had been received. March 12, 1889. Dr. Leidy read a paper on Cliona. March 19, 1889. Dr. Brinton exhibited a specimen of *Chrysosplemium americanum.*—Professor Ryder discussed the question of mammalian descent.—Dr. Rex exhibited a specimen of an undersized trichia from Montana.—Dr. Brewer exhibited specimens of yeast and described the development of its cells. —Mr. Wingate exhibited and described a new myxomycete.— Mr. Ives gave a résumé of a paper on "Variation of Color in Star-Fish." March 29, 1889. Dr. McCook explained the structure of spider webs.

April 2, 1889. Dr. Koenig described some Kansasite from Kansas.—Mr. Woolman called attention to the micro-geology of Atlantic City.—Professor Heilprin spoke of the geology of Bermuda and the structure of coral reefs.—Professor Ryder gave the development of vertebræ in certain lower forms.—A communication from Professor Wilson on the production of aerating organs on the roots of swamp and other plants was read. April 9, 1889. Mr. Meehan made a communication on dogwood.—Mr. Ryder spoke further of his studies of the vertebral column. April 16, 1889. Dr. Hartzell exhibited a section of skin mounted in monobromide of naphthaline.—Professor Ryder commented on the homologies of the jaw of Acanthias in mammalian dentition—Dr. Rex spoke of the interest attaching to common molds and mildew. April 23, 1889. Mr. Wilcox recounted his own explorations of Florida with reference to the geology of that State.—Professor Leidy spoke briefly of the palæontology of Florida.— Professor Heilprin gave a résumé of his study of the fauna of the Bermudas—Mr. Ives described the ophiurans. April 30, 1889. Professor Ryder resumed the report of his study of the development of the vertebral column with especial reference to its growth in the sharks.

May 7, 1889. An invitation from the University of Pennsylvania to remove the building to West Philadelphia was read.—Mr. Meehan referred to his former communication on the formation of species of dog-wood as affected by the principles of acceleration and retardation.—Professor Wilson spoke of the relation of various vegetable substances to electric filaments as bearing upon electric illuminations.—Mr. Redfield detailed the nature of botanical travel one hundred years ago. —Professor Dolly offered some remarks on Bahama plants.—Professor Rothrock described the sand dunes of Lewes, Del. May 14, 1889. Mr. Pilsbry spoke of the modifications of the odontophores in the Rhipidoglossa.—Mr. Ford referred to a new species of Helix from New Guinea, and to a group of fossil olives from Florida.—Mr. Wilcox described the habits of *Fasciolaria gigantea* from Florida. Mr. Campbell exhibited specimens of the genus Cypræa illustrating the convergence of species.—Professor Ryder gave the results of his studies into the structure of the transparent tissues surrounding the eye of the common shad. May 21, 1889. Professor Ryder gave the substance of a paper on Volvox.—Dr. Rex spoke of the development of a species of myxomycetes, *Clathroptychium rugulosum.*—Dr. Wingate exhibited specimens of the genus Physarum. May 28, 1889. The following resolution adopted: *Resolved,* That the Academy, in accordance with the recommendation of the Council, declines to accept the proposition made by the Provost of the University to move the institution to West Philadelphia.—Professor Ryder recounted recent investigations of heterocercous fishes.—Mr. Wilcox stated that eggs of Ampularia sent to Wagner Institute had all hatched out.

June 4, 1889. Professor Heilprin placed on record the finding of the first fossils in the limestone near Henderson Station. —Mr. Woolman exhibited a specimen of cretaceous limestone outcrop from the neighborhood of Clementown, N. J., full of *Trochosmilia atlantica.*—Professor Sharp described the extinct circular crater of St. Vincent.—Mr. Rand exhibited specimens of serpentine pseudomorph after asbestos, found near Radnor Station, and a variety of Iceland spar from Rossy Wene, N. J. —Mr. Jefferis exhibited a specimen of clinoclase from the Birmingham quarries. June 11, 1889. Dr. Horn exhibited a collection of beetles injurious to vegetation.—Dr. Skinner exhibited two rare papilios (*P. dasorada*) from Sikkim, India, and and an X butterfly from the Andaman Islands.—Dr. McCook made a communication in the sense of hearing of spiders. June 18, 1889. Professor Ryder described the larva of a species of salamander Amblystoma, which showed heterocercy. He also described the occurrence of hypertrophied hairs on the tips of the shoots of Ampelopsis.—Professor Sharp told of some carnivorous bats.—Dr. Rex exhibited a rare fructification of one of the black molds.—Dr. Hall called attention to aspergillus growth from a Brazil nut.—Mr. Wingate exhibited a box containing some enteridium.

BOSTON SOCIETY NATURAL HISTORY.—President, F. W. Putnam; Vice-Presidents, John Cummings, G. L. Goodale; Curator, Alpheus Hyatt; Honorary Secretary, J. C. White; Secretary, J. Walter Fewkes; Treasurer, Charles W. Scudder; Librarian, J. Walter Fewkes; and twenty-five Councilors.

The following papers were read: Mr. A. F. Foerste spoke of "The Palæontological Horizon of the Limestone Beds of Nahant."—Mr. J. E. Wolff read a paper on "Some Metamorphic Rocks in the Green Mountains.—Mr. A. F. Foerste then considered "The Fossils of the Clinton Group of Indiana and Tennesee."

BIOLOGICAL SOCIETY OF WASHINGTON—The following communications were read: January 26, 1889. Dr. Cooper Curtice, Notes on the Sheep Tick, *Melophagus ovinus* LINN. —Dr. Geo. Vasey, New Species North American Gramineæ of the Last Twelve Years.—Mr. Th. Holm, Contributions to the Morphology of the Genus *Carex.*—Dr. C. Hart Merriam, A new species of Pika (*Lagomys*).

February 9. The following papers were read: Mr. B. F. Galloway, Diseases of the Sycamore.—Dr. Thomas Taylor, A new Freezing Microtome.—Mr. A. A. Crozier, Influence of Foreign Pollen on Fruit.—Mr. J. N. Rose, Geographical Distribution of the Umbelliferæ.—Dr. C. Hart Merriam, A New and Remarkable Vole from British Columbia.

February 23d. Mr. E. M. Hasbrouck, A New Maryland Yellow-throat.—Mr. M. B. Waite, Notes on *Melampsora hydrangeæ* Lusk. Notes the Seed Vessels of the Lop Seed *Phyrma leptostachya.*—Mr. Chas. D. Walcott, The Genus Olenoides of Meek.—Dr. R. L. Stejneger, Notes on Pallas' Cormorant.—Mr. F. V. Colville, The Fruit of *Stipa spartea.*—Dr. C. Hart Merriam, A New Marmot from the Sierra Nevada.

March 9.—Mr. Geo. B. Sudworth, Variations in the genus *Quercus.*—Mr. W. B. Barrows, Dangerous seed-planting by the Crow.—Dr. C. Hart Merriam, A new Ground Squirrel from the Southwest.—Mr. Chas. D. Walcott, The Genus *Olenellus* of Hall.

March 23. Dr. W. H. Seaman, Our Present Knowledge of the Rotifers.—Mr. C. L. Hopkins, A Point of Definition.—Mr. Geo. B. Sudworth, Variations in the genus *Quercus.*—Mr. W. H. Dall, Reproductive Organs in Certain forms of Gasteropoda.

April 20. Prof. Joseph F. James, The Effect of Rain on Earthworms.—Mr. F. W. True, The Occurrence of Sowerby's Whale on the Coast of New Jersey.—Mr. Theo. Holm, The Germination of Sarracenia, Rheum, Peltandra, Hemerocallis and Cyperus.—Dr. C. Hart Merriam, A new Vole from the Gulf of St. Lawrence.—Mr. Geo. B. Sudworth, The Influence of Odor in Attracting Insects.

May 4. Mr. W. T. Hornaday, Exhibition of a Specimen of the Black-footed Ferret (*Putorius nigripes*).—Mr. B. E. Fernow, Annual Ring-Growth.—Dr. Theobald Smith, Parasitic Prozotoa (*Coccidia*) in the Renal Epithelium of a Mouse.—Dr. H. E. Van Deman, Tropical Fruit of the Lake Worth Region.—Dr. C. Hart Merriam, A new Spermophile from Arizona.

May 17. Dr. C. Hart Merriam, Two new Spermophiles from the Lower Colorado, with remarks on the Importance of the Type Locality in the Study of Species.—Dr. Cooper Curtice, How Entozoa Cause Disease.—Mr. Frederick W. True, Exhibition of a Skull of a Female Narwhal with two well developed Tusks.—Mr. L. O. Howard, Notes on Spider Bites.—

Mr. C. D. Walcott, Description of New Genera and Species of Lower Cambrian Fossils.

WICHITA ACADEMY OF SCIENCE.—On Saturday, April 6th, 1889, the Wichita Academy of Science was organized, having for its object "to promote the study of science and stimulate original investigation." The officers elected for the ensuing year are as follows:

President, J. M. Naylor, A.M.; 1st Vice-President, M. E. Crowell, A.B.; 2d Vice-President, W. A. Crusinberry, A.M.; Recording Secretary, J. S. Foote, M.D.; Corresponding Secretary, Fred L. Johnson, M.D.; Treasurer, F. J. Ford; Curator, E. L. Kemp, A.M.; Librarian, F. L. Hinsdale, M.D.

Regular meetings are to be held on the first Saturday of each month.

THE KENT SCIENTIFIC INSTITUTE, GRAND RAPIDS, MICH.—The following is the list of the officers for 1889:

President, E. S. Holmes; Vice-President, W. A. Greeson; Recording Secretary, C. W. Carman; Corresponding Secretary, E. S. Holmes; Treasurer, C. A. Whittemore; Director of the Museum, W. A. Greeson; Curator, C. W. Carman; Librarian, E. L. Moseley. Board of Directors: Wright L. Coffinberry, W. A. Greeson, Samuel L. Fuller, E. S. Holmes, J. W. Jones, C. A. Whittemore. Officers of the Board: Chairman, W. A. Greeson; Secretary, E. S. Holmes; Treasurer, C. A. Whittemore.

CHICAGO ACADEMY OF SCIENCES.—A regular meeting of the Academy was held in the Art Institute, Michigan Boulevard and Van Buren Street, March 12th, at 8 o'clock. The evening was devoted to a conversation on the "Great Glacial Moraine at Lombard, Illinois," as examined by the Academy, at the excursion in June, 1888.

NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.—Nov. 10th, 1888. This being the annual meeting, officers for the ensuing year were elected as follows: President, L. P. Gratacap; Treasurer, Samuel Henshaw; Recording Secretary, K. B. Newell; Corresponding Secretary, Arthur Hollick; Curator, W. T. Davis.

December 8th. Mr. L. P. Gratacap read the following paper upon the "Relation Between the Growth and Form of Leaves:"

It is obvious that the form of leaves must be the resultant of rates of growth in various directions. That a simple leaf with a single midrib will assume such a mature form as will express the equilibrium of the growing impulse along two axes, a longitudinal and a lateral one, and that as this ratio varies in favor of the first or the second, the leaf becomes ovate, circular, broadly elliptical, etc., or lanceolate, linear and elongated. And secondarily, in the case of the simple leaf, the point of intersection of the axis will modify the final form. If the lateral axis is developed at an early stage in the elongation of the midrib we have ovate leaves, if at a point half way along its length elliptical, if at the distal extremity obovate. And in leaves of a complex structure, whether palmate, pinnate or numerously veined with woody and rigid vascular fibres, we can resolve the entire form into a group of simple forms, wherein we may study the related rates of development in lamination (formation of parenchyma), and in vasculation (formation of ribs, veins, etc.). In other words, the rapid movement forward of rib cells would appear to interfere with or prevent the making of the leaf lamina, and their slow movement to assist it. In a leaf with several ribs, the slow progress of the rib-making permits the coalescence of the marginal tissues, and forms polygonal and crenate circular leaves, and also tends to introduce bifurcation and deliquesence of the original fibre bundles. In one, where the extension of the ribs is rapid, this coalescence is checked, and the leaf is sinuate, lobed, irregular and pinnatified.

It is thus apparent that a determination of the *actual* rate of growth in leaves may throw some light or be useful in assisting speculation as to the origin of leaf forms. And it is also apparent that there might be a condition of things exactly the reverse of our supposition given above, and yet produce the same result. That is, a linear leaf might be a, so to say, slowly made leaf as well as a quickly made leaf, if the movements of its parts maintain a ratio which gives extension in length and not in breadth. And in many cases of turgid and dense tissues in leaves this is probably so.

However the measurement of a number of leaf growths including those of Morning-glory, Musk-melon, Water-melon, Maples, *Magnolia*, Beach, Japanese Quince, Five Finger, etc., made this year on Staten Island, do seem to show that the elongated leaves grow much the more rapidly, that the palmate and pinnate leaves stand next in order, and the circular and transverse leaves last. [A diagram was here presented showing these results in part, with the rate per day of growth, also the slowly diminishing rate of growth of the leaf as it approached completion.]

Of course a number of considerations occur at once to modify the wholesale use of this conclusion. The relative size of the leaves compared should be similar, the condition of healthfulness of the plants alike, the nature of the plant tissue nearly the same, and the position and aspect of the leaves, as regards favorable or unfavorable conditions for growth, identical. The subject is suggestive, and carefully followed up might lead to interesting results.

Mr. Arthur Hollick showed fossil leaf impressions in ferruginous sandstone, found near Arrochar Station by Mr. Gilman S. Stanton. They are undoubtedly from the same formation as those from Tottenville (Cretaceous ?) described in the Proceedings of December 8, 1883, and like them, were not in place where found, but occurred in Drift rocks. The specimens are too fragmentary for determination, but the fact of their discovery at this new locality is a matter of interest and is therefore placed upon record.

Specimens of bowlder clay from the same locality were also shown. It has been lately utilized for brick making. There is a fine exposure of modified drift, overlaid by bowlder drift, where the railroad has been cut through.

Dr. A. L. Carroll noted the discovery on Staten Island recently of *Bothryocephalus latus*—the first reported occurrence of this parasitic worm in America.

Specimens of the "Large Mocker Nut," *Hicoria alba*, (L.) Britton, *var. maxima* (Nutt., Britton.), were presented—being an addition to the local flora. They were collected by Dr. Britton near Court House Station.

February 9, 1889. Mr. Chas. W. Leng read a paper upon "The Buprestidæ of Staten Island," illustrated by specimens of the species mentioned.

It is thought that the larvæ of many species take years to perfect their growth, and an instance is recorded of a *Buprestis* emerging from the wood of a desk that had been in use for twenty years. One of our commonest species. *Chrysobothris femorata* is, however, said by Packard to complete its transformations in twelve months, so the usual period is uncertain.

This insect is found every year in numbers on oaks and occasionally other trees. I took the greatest number about 1880, when Mr. Davis and I found a log near Silver Lake literally alive with them. They would take short flights and lighting on the log, hide in the crevices of its bark, which, by their color and deep-wrinkled furrows, they simulate to a degree. Many other species have this restless habit of flying from place to place, and on the wing look and buzz very like flies.

Two species of *Agrilus* are also abundant—*ruficollis* and *otiosus*—the first usually on wild blackberries and the second on a variety of young saplings. When the trees around Marling's Pond were cut down about three years ago, a growth of saplings sprang up on which the species of *Agrillus* were quite plentiful and besides many *otiosus* an occasional *bilineatus* or *interruptus* was found.

I have never found any of our other species in great numbers. Of the *Anthaxia* all my specimens have come from a clump of wild cherry in the Clove Valley. *Chalcophora* is said to breed in pine, but a good deal of beating has yielded little. The species have been found washed upon the beach and one specimen of *liberta* was taken by Mr. Davis flying at Watchogue. Two species of *Brachys* occur on the leaves of certain oaks, and I have found them in North Carolina in great numbers. Probably they will be found abundantly somewhere on Staten Island.

Chrysobothris azurea was a notable capture of 1886, and is everywhere counted a rare insect, but from May to July of that year it was plentiful on a species of dogwood in a thicket now burned over and turned into "Prohibition Park." The house, built, as I am told, for the dominie, stands just above where the first was taken. The beetles were very quick in their movements, and were captured by beating the trees over an umbrella, out of which they flew again as soon as they touched it. Several were observed resting on the main stems of the young trees with the anterior legs extended and the last ventral segment touching the bark and they were probably females depositing their eggs. None have been found since 1886, nor have I been able to find the larvæ in the few trees that are left.

Attention was called to the recent death of Mr. S. Elliot Lowell.

March 14, 1889.—Mr. L. P. Gratacap showed specimens of fossils from a drift bowlder and gave the following account of the same:

Mr. C. S. Egbert in excavating a foundation for a house at Fort Wadsworth station on the Rapid Transit Railroad, on the north side of the Fingerboard Road, and a few hundred feet northeast of the station, uncovered a bowlder of Oriskany Sandstone which upon examination by Mr. Wm. T. Davis proved to be of great interest. It was a compact mass of fossils representing over twenty species characteristic of that horizon, of which fourteen were new to our list previously published (Extra No. 6, March, 1887.) Amongst these were some of considerable rarity, and while many were in a fragmentary condition or preserved as impressions only, they were all unmistakably identified, and form a valuable addition to our palæontological possessions.

The list of new additions is as follows:

Pholidops arenaria, Hall.
Streptorhynchus hipparionyx, Vanuxem.
Strophodonta magnifica, Hall.
Chonetes campalnatus, Hall.
Leptæna nucleata, Hall.
Spirifera pyxidata, Hall.
Leptocœlia flabellites, Conrad.
Eatonia peculiaris, Conrad.
Rennsselaeria ovoides, Eaton.
Pterinea Gebhardi, Hall.
" *textile*, Hall,
Aviculopecten rectirostris, Hall.
Platyceras nodosum, Conrad.
Platyostoma ventricosum, Hall,

Mr. Arthur Hollick exhibited mounted specimens of new or noteworthy additions to the local flora and read the following memoranda in connection with them:

Since the fourth appendix to the Flora of Richmond County was published, about two years since, there have been many plants found which require recording. The full list, containing thirty-six species and varieties new in our Island's flora, will be published as usual in the *Bulletin of the Torrey Botanical Club*, as the fifth appendix. Reprints of the same will be distributed to all those desiring them. Memoranda in regard to some of the species have been published in our Proceedings, while others have not been recorded, although of considerably interest.

For several years specimens of a peculiar *Ranunculus* were collected in the Clove Lake Swamp. They were classed under the species *fascicularis*, the common Early Buttercup, although plainly not identical with it. The most remarkable characteristic of all the plants was a tendency to fasciation which showed itself year after year, and may be seen in all the specimens collected. The species has lately been determined to be *Ranunculus septentrionalis*, Poir. Thus far it has not been found in any other locality on the Island.

In studying the herbarium of the late Wm. H. Leggett many plants were noted as having been collected on Staten Island. Amongst the most interesting were several specimens of *Lechea racemulosa*, Lam, from Tottenville, mixed with and included under the name of *L. thymifolia*, Michx.

Trifolium hybridum, L., supposed to be a hybrid between the Red and White Clovers, is becoming more common, and may be now found along many of the streets of New Brighton, and also on the filled-in ground at St. George.

A species of Honeysuckle was admitted into the last appendix under the name of *Lonicera ciliata*, Muhl. A single bush in flower was found in some cedar woods just north of Garretsons. It was undoubtedly native where found. Since then, Mr. Wm. T. Davis has discovered the plant, in fruit, in a similar situation at New Brighton. With the material now in our possession we are enabled to determine it to be *L. xylosteum*, L , the European Fly Honeysuckle, which has somehow become established and thoroughly naturalized here, probably through the agency of birds.

On May 30, 1888, a single plant of *Cynoglossum officinale*, L., was found in a field near Richmond. The only other time that this plant was reported from the Island was in 1880, when a single specimen was found near Concord.

Amarantus hybridus, L., in every stage of hybridization between the green Pigweed and the red Prince's Feather is common along the streets and in waste places in New Brighton.

Thus far I have failed to find a Butternut tree growing here independent of cultivation, but in the Trans. N. Y. State Agri. Soc., for 1843, there is a list of the trees common on Staten Island, by Dr. Samuel Ackerly, and this tree is included in the list, under the name of *Juglans cathartica*, Michx. It is quite possible that at that time it may have been native here.

Mr. Wm. T. Davis has reported the discovery of several more trees *Betula nigra*, L., the Red or River Birch, near Richmond, Annadale and Old Place, but the total number of trees is so small that the speedy extermination of the species on the Island is certain.

Salix purpurea. L., the Basket Willow, has become established in several localities notably near Garretsons and Old Place. These trees no doubt originated from cuttings of cultivated trees which were thrown aside in rubbish heaps. At Garretsons their presence is easily accounted for by the old plantation belonging to the late John Reed, which has been cultivated for generations. No doubt at Old Place there was also a plantation, although no indication of it was noticed. A single isolated tree was found on a roadside near Woodrow.

A single tree of the Hemlock Spruce (*Tsuga Canadensis*, L.) was found near Old Place. It is a somewhat conspicuous object as it is the only large tree, and an evergreen at that, left standing in a recently cleared place of woodland, where all the surrounding hardwood trees have been cut down.

In the sandy soil at Mariners' Harbor, Watchogue and Kreischerville occurs abundantly a form of Cat Brier, which is clearly a variety of the common *Smilax glauca*, Walt. The leaves are narrow and elongated, often constricted in the middle so as to be almost fiddle-shaped, and the stem, especially at the base, is thickly beset with prickles. It agrees with the description of the so-called *S. spinulosa*. Smith.

Several of the plants admitted into our catalogue without having been personally seen have been discovered within the past two years. Amongst them may be mentioned *Lathyrus maritimus*, (L.) Bigel., the Beach Pea. This was admitted on the authority of a specimen in the herbarium of the late Dr. Samuel Elliot and it now turns up at New Dorp near the old race course.

Pycnanthemum incanum, (L), Mich., admitted on the same authority, grows on Ocean Terrace.

Salix tristis, Ait., the Dwarf Gray Willow, was credited to Staten Island about twenty years ago in the *Bulletin of the Torrey Botanical Club*. There is a small patch growing south of the railroad between Richmond Valley and Tottenville, within a few yards of the hybrid oaks described in our Proceedings for September and October, 1888, which is probably the same locality where it was originally found.

Sabbatia dodecandra, (L.) (*S. chloroides*, Pursh.,) was reported by Mr. E. M. Eadie from near Chelsea. It was found in the Autumn of 1887 growing abundantly on the salt meadow near Kreischerville.

Dr. N. L. Britton showed specimens of yellow gravel and kaolin and remarked upon a recent discovery of another exposure of the Cretaceous strata which are known to underlie a considerable portion of Southfield and Westfield. This new exposure is on the Fingerboard Road about a quarter of a mile east of Grassmere Station. A cutting in the north side of the road shows a section of glacial and modified drift, under which may be seen some of kaolin similar to that which is so extensively dug near Kreischerville. This is associated with a small amount of yellow gravel. He stated that it could not be positively determined whether the kaolin was exactly in place or had been ploughed up from below and enclosed in the moraine as at the Prince's Bay bluff, already described in the Proceedings, November 8th, 1884.

SCIENTIFIC NEWS.

NATURAL HISTORY AT THE PARIS EXPOSITION.—Although the Paris Exposition has no special biological department, it cannot be said that biology is entirely unrepresented. The Woods' and Forests' Building, in the Gardens of the Trocadero, is composed of trunks and branches of trees native to or naturalized in France, all labelled with their botanical and French names, and the gallery around its interior has a collection of the seeds, leaves, resins, etc., of those trees, as well as of the fungi and insects injurious to them. Around this building are planted examples of native and introduced trees. The exhibit of the Transvaal Republic, in the Invalides Gardens, has a series of the eggs of many South African birds; the Argentine Republic, besides an extensive collection of woods, including many Legumenosæ and Rubicæ, *Zuglans Australes*, species of Myrsine, and large sections of *Cedrela brasiliensis*, has a set of fishes, reptiles, etc., preserved in alcohol, and Gautemala puts forward a fine collection of insects, and quite a number of birds. Most of the exhibits of the smaller and less important countries devote, in fact, a considerable space to their minerals, plants and animals, and this is true not only with regard to America, Australia and Africa,